

## **REMARKS**

### ***Status of the Claims***

Prior to the present amendment, Claims 25-57 are pending in the instant case. Claims 1-24 were initially present in the International PCT Application, and were canceled by a Preliminary Amendment submitted concurrently with the entry of the present application into the National Phase of the PCT. Applicant has reviewed the claims in light of the outstanding of the outstanding Office Action, and proposes further amendments thereto, that are believed to narrow the outstanding issues and to advance prosecution. As a result, claims 25 and 29-57 as amended are now presented for consideration.

Specifically, claim 25 has been amended to address the examiner's objections set forth in Paragraphs 6-9 of the office action, and to thereby better state the features of the claimed invention. Further, the limitations of claims 26-28 have been incorporated into claim 25, so that the claim as amended includes a more extensive recitation of the inventive method. In addition, the preamble of the claim has been amended to focus the method on searching biochemical data or information. This recitation is taken from claim 36 as filed, and no new matter is believed to be introduced thereby.

Claim 29 has been amended to depend from claim 25 as claim 28 has been canceled. Likewise, claim 36 has also been amended to depend from claim 25 and focus the target sequence fragments of that claim on nucleotide sequence data. Support for this amendment can be found in the specification at page 11, line 2. Correspondingly, new claim 57 has been added to cover the use of the method for polypeptide sequence data. Support for the applicability of the method in this regard is found in the specification at page 1, line 21.

Claims 44, 46 and 54 have been amended to respond to the examiner's comments in paragraphs 6-9 of the action, and claim 54 has been further amended to respond to the rejection under 35 U.S.C. 101. Support for these last mentioned amendments can be found in claim 44 as filed and in the specification at page 9, line 32 – page 10, line 3. No new matter is believed to be introduced by these amendments, and entry and favorable consideration thereof is requested.

It should be noted that the claims have been amended in the same manner as the claims of counterpart European Patent Application No. 05 701 874.9, where the U.S. patent to Califano, that is of record and cited herein, was considered by the EPO as well, and where the application

so claimed was determined to be patentable thereover, as per a copy of the Communication under Rule 71(3) EPC dated 06 November 2008, attached hereto. Applicant submits that the claims as amended herein are likewise free of the prior art and entitled to favorable consideration and allowance, and such action is accordingly requested.

### ***Priority***

The examiner has acknowledged applicant's claim for priority but indicates that the certified copy of the priority document has not been filed. In response, applicant directs the examiner to the record to the International (PCT) application, that applicant understands, is part of the record in the present application pursuant to 35 U.S.C. §371, wherein the certified copy of GB 0400974.2 was submitted, and its submission and placement on the record was confirmed by the International Bureau. A copy of the PCT Notification Concerning Submission or Transmittal of Priority Document, and an as-filed certified copy of the said GB priority document are enclosed herewith in confirmation of applicant's satisfaction of this requirement on the record. Accordingly, confirmation of applicant's entitlement to priority is believed to be warranted, and is respectfully requested.

### ***Claims Worksheet***

The examiner has noted that 32 claims were presented although 31 claims were stated on applicant's transmittal documents, and on the claims worksheet. In accordance with this response, applicant has canceled several claims so that fewer than 31 claims remain. On this basis, applicant submits that the error is now moot, and requests that further action be deemed not necessary. Favorable consideration of this request is solicited.

### ***Claim Objections***

The examiner has objected to claims 25, 28, 44, 46 and 54 on various bases, including the presence of the term 'potentially', and particular phrases appearing in step b) of claim 25 and in claim 28, and in an incorrect claim reference in claim 36. Claim 25 has been amended to eliminate the objected to language, claim 28 has been canceled without prejudice and its content has been revised and added to claim 25, and claim 36 has been amended to depend from claim 25. All of the foregoing amendments are believed to resolve the objections raised by the examiner and withdrawal of the noted objections is requested.

### ***Claim Rejection – 35 USC §101***

Claims 54-56 have been rejected under 35 USC § 101 as directed to non-statutory subject matter. Claim 54 has been amended to integrate the claimed software with the device with which it operates, and in this way the claim as amended presents the structure referred to and sought by the examiner. Likewise, claims 55 and 56 depend from claim 54 and incorporate the recitations of the primary claim, so that the rejection of these claims is likewise believed to be overcome.

Accordingly, reconsideration and withdrawal of the rejection of claims 54-56 as amended is believed to be in order, and is requested.

### ***Claim Rejections – 35 USC §103***

Claims 25-28, 31-34, 36, 38-41, 43-50, 52-54 and 56 have been rejected under 35 USC §103(a) as unpatentable over Califano (US 5,577,249 B1) in view of Bjornson et al. (US 6,691,109 B2). As this rejection may pertain to the claims as amended, it is traversed.

Initially, and as discussed above, the claims have been amended to distinguish this combination, and by so doing, to highlight the features of the present method that are neither disclosed nor fairly suggested by the references of record.

Generally described, the present method involves the breakdown of the fragments into individual segments, followed by the comparison of the first groups to identify lead fragments, only after which the leads (or the ‘matches’ of step d) are determined, and after which the same sequence of steps, i.e. steps b)-d) are again performed, are subsequent comparisons made to identify further matches.

Importantly, all of the foregoing steps are performed in serial fashion, and this serial aspect of the present method and system is one of the distinguishing features of the invention that is nowhere found in either Califano or Bjornson et al., or in any of the references cited and applied herein.

Particularly, the present method proceeds through the sequence of steps in serial fashion. The first and second groups are established as described in claim 25 steps a) through c), after which in steps d) and e), the first query groups and first target groups are then compared, with the comparison of both initial distributions taking place in step d), and thereafter and as recited in step e), the repetition of steps b) through d) taking place with different distributions of segments. Only after the completion of the comparison of first groups takes place (in the completion of

step e)), does the comparison of the second groups and the consequent identification of any query sequences in a target sequence that would allow for the sought after mismatches, all as set forth in step f) take place (see also the specification at page 6, lines 6-17, and particularly, lines 11-17).

Accordingly, the sequence of steps outlined in claim 25 as amended, and in the recitation of the specification at page 6, lines 6-17, instructs the practice of the present method by the sequential performance of each of the steps recited, and does not contemplate the performance of any of the steps concurrently, or in parallel. With this explanation as prologue, a discussion of Califano and Bjornson et al. follows below.

Califano relates to a method for searching a sequence to find a particular reference sequence, which involves the partitioning of the respective sequences into subsequences, the association of respective non-contiguous subsequences from each of the respective sequences with each other to form what are referred to as tuples, placement of the respective tuples into tables, and their comparison to determine degree of similarity. As pointed out by the examiner, Califano does not disclose the ability or means to allow for mismatches in sequence positions, that is an important aspect and attribute of the present method and invention. Also, applicant submits that Califano neither discloses nor suggests the sequential comparison of groups of segments, particularly as set forth in the claims herein.

Bjornson et al. discloses a method and system for sequence comparison where multiple query sequences are searched against a series of databases, advantageously by the parallel operation of a multiple computers. A review of Bjornson et al. reveals nothing that suggests the adoption and use of the serially operated method of the present invention. Moreover, the passage relied upon by the examiner is simply a general discussion of the BLAST algorithm, that appears in Bjornson et al. in a discussion of the state of the art. Clearly, the present invention goes beyond the known BLAST algorithm in its methodology, and nowhere in the art of record, and particularly, within the disclosure of either Bjornson et al. or Califano is there the suggestion for the development or practice of present method, which is practiced in the serial manner called for by the present claims as amended.

As stated above, the present method proceeds in at least two phases in serial and this mode of operation confers clear advantages: the first groups of segments are compared before the second group is compared, as the results of that first comparison allow a more efficient second

group comparison.

Accordingly, as Bjornson describes a method of analysis of segments that proceeds in parallel, rather than in serial, and as there is no suggestion in Bjornson et al. of the present method, Bjornson et al. fail to cure the deficiencies of the primary reference to Califano, including those acknowledged by the examiner to exist, so that the combination of Califano and Bjornson in rejection of the claims particularly as presently amended, is untenable. Therefore, withdrawal of this ground of rejection is believed to be in order, and is requested.

Claims 29, 30 and 37 have been rejected under 35 USC §103(a) as unpatentable over Califano (US 5,577,249 B1) in view of Bjornson et al. (US 6,691,109 B2), as applied to claim 25, and further in view of Patzer (US Publication No. 2004/0059721 A1). As this rejection may pertain to the claims particularly as amended, it is traversed.

Initially, the deficiencies of the combination of Califano and Bjornson et al. as to claim 25 have been discussed in detail above, and that discussion is incorporated herein by reference and made a part hereof. Patzer adds nothing to cure the noted deficiencies, and on this basis alone, the combination of Califano, Bjornson et al. and Patzer is untenable. Moreover, applicant challenges the applicability of Patzer as a reference, as its publication date is later than the priority date to which the present application is entitled. Particularly in view of the clarification that the certified copy of the priority document has been of record in the International Stage of the PCT application and that applicant is entitled to the prior filing date, the inapplicability of Patzer is clear, and on this basis alone, withdrawal of Patzer as a reference and withdrawal of the combination of Califano, Bjornson et al. and Patzer, is appropriate and is accordingly requested.

Claims 35 and 55 have been rejected under 35 USC §103(a) as unpatentable over Califano (US 5,577,249 B1) in view of Bjornson et al. (US 6,691,109 B2), as applied to claims 25 and 54, and further in view of Walker et al. (US 6,633,817 B1). As this rejection may pertain to the claims particularly as amended, it is traversed.

As stated above with respect to the rejection including Patzer, the deficiencies of the combination of Califano and Bjornson et al. as to claim 25 have been discussed in detail above, and that discussion is incorporated herein by reference and made a part hereof. Like Patzer, Walker et al. fails to cure the deficiencies of the primary references, as the search trees implemented by the reference do not disclose or suggest the serial operation of the present

method in the identification of sequence fragments, and the comparison of a first set of such fragments before the comparison of second and subsequent groups of fragments, all to identify mismatches, as definitively disclosed and claimed herein. Accordingly, the rejection as it is based on a combination of Califano, Bjornson et al. and Walker et al. is likewise deficient, and withdrawal thereof is believed to be in order, and is requested.

Claims 42 and 51 have been rejected under 35 USC §103(a) as unpatentable over Califano (US 5,577,249 B1) in view of Bjornson et al. (US 6,691,109 B2), as applied to claims 25 and 54, and further in view of Myers et al. (US 6,714,874 B1). As this rejection may pertain to the claims particularly as amended, it is traversed.

As stated above with respect to the rejection including Walker et al., the deficiencies of the combination of Califano and Bjornson et al. as to claim 25 have been discussed in detail above, and that discussion is incorporated herein by reference and made a part hereof. Like Patzer and Walker et al., Myers et al. likewise fails to cure the deficiencies outlined with respect to the primary references. Myers et al. is indicated to disclose the use of a hash function to split the respective queries into prefixes and suffixes. This functionality per se, does not rehabilitate the primary references, particularly as they are applied against the claims as amended.

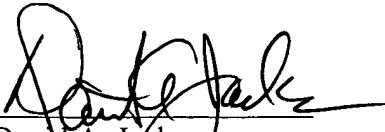
Accordingly, the rejection as it is based on the combination of Califano, Bjornson et al. and Myers et al. is deficient in rejection of claims 42 and 51, and withdrawal of this ground of rejection is believed to be in order, and is therefore requested.

### ***Conclusion***

To summarize, therefore, the features of the present method are believed to be more clearly recited in the claims as amended and presented for consideration, and are likewise believed to clearly distinguish the references applied in rejection. Likewise, applicant believes that the amendment of the claims overcomes any informalities indicated by the examiner, and clarifies the features of the invention and renders the claims allowable. Applicant submits that patentable subject matter is clearly defined and that all grounds of rejection have been overcome.

In view of the above and foregoing, reconsideration and withdrawal of the outstanding grounds of objection and rejection and early allowance of the claims as amended is believed to be in order and is courteously solicited.

Respectfully submitted,

  
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ENCLOSURES:      Copies of Certified copy of GB 0400974.2 and  
Notice Concerning Submission or Transmittal of Priority Document  
EPO Communication Under Rule 71(3) EPC  
Request for Three (3) Month Extension of Time  
Check No. 5224 in the amount of \$555.00



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Application No. 05 701 874.9 - 2201	Ref. P64626EP00	Date 06.11.2008
Applicant Solexa Ltd.		

#### Communication under Rule 71(3) EPC

You are informed that the Examining Division intends to grant a European patent on the basis of the above application with the text and drawings as indicated below:

In the text for the Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

#### Description, Pages

1-3, 7-27 as published  
4, 4a, 5, 6 filed with telefax on 14.11.2007

#### Claims, Numbers

1-24 received on 09.10.2008 with letter of 08.10.2008

#### Drawings, Sheets

1/7-7/7 as published

**With the following amendments to the above-mentioned documents by the examining division**

Description, Pages 1,4\*,7\*,9\*,10\*

#### Comments

\* to be consistent with amended claims



A copy of the relevant documents is enclosed

The title of the invention in the three official languages of the European Patent Office, the international patent classification, the designated Contracting States, the registered name of the applicant and the bibliographic data are shown on the attached EPO Form 2056.

You are requested within a non-extendable period of **four months** of notification of this communication

1.	to file 1 set of translations of the claim(s) in the two other EPO official languages;		EUR
2a.	to pay the fee for grant including the fee for printing up to and including 35 pages; Reference 007		790.00
2b.	to pay the printing fee for the 36th and each subsequent page; number of pages: 6	Reference 008	72.00
3.	to pay the additional claim fee(s) (R. 71(6) EPC); number of claims fees payable:	Reference 016	0.00
		Total amount	862.00

The mention of the grant of the patent shall be published in the European Patent Bulletin as soon as possible after the requirements concerning the translation of the claims and the payment of the fees for grant and printing, claims fees, designation fees and renewal fees as laid down in Rule 71(3), (4), (6) and (8) and (9) EPC are fulfilled.

Any divisional applications relating to this European patent application must be filed directly at the European Patent Office in Munich, The Hague or Berlin in accordance with Article 76(1) and Rule 36 EPC **before** the date on which the European Patent Bulletin mentions the grant of the patent (see Art. 97(3) EPC and OJ EPO 2/2002, 112).

If you do not approve the text intended for grant but wish to request amendments or corrections, the procedure described in Rule 71(4) EPC is to be followed.

If this communication is based upon an auxiliary request, and you reply within the time limit set that you maintain the main or a higher ranking request which is not allowable, the application will be refused (Art. 97(2) EPC).

If the enclosed claims contain amendments proposed by the Examining Division, and you reply within the time limit set that you cannot accept these amendments, refusal of the application under Article 97(2) EPC will result if agreement cannot be reached on the text for grant.

In all cases except those of the previous two paragraphs, if the fees for grant and printing or claims fees are not paid, or the translations are not filed, in due time, the European patent application will be deemed to be withdrawn (R. 71(7) EPC).

For all payments you are requested to use EPO Form 1010 or EPO Form 1010E or to refer to the relevant reference number.

After publication, the European patent specification can be downloaded free of charge from the EPO publication server <https://publications.european-patent-office.org> or ordered from the Vienna sub-office upon payment of a fee (OJ EPO 2005, 126).

Upon request in writing each proprietor will receive the certificate for the European patent **together with one copy** of the patent specification provided that the request is filed within the time limit of Rule 71(3) EPC. If such request has been previously filed, it has to be confirmed within the time limit of Rule 71(3) EPC. The requested copy is free of charge. If the request is filed after expiry of the Rule 71(3) EPC time limit, the certificate will be delivered without a copy of the patent specification (R.74 EPC, Decision of the President of the EPO, Special edition No.3, OJ EPO 2007, D.2).

#### **Note on payment of renewal fees**

If a renewal fee falls due between notification of the present communication and the proposed date of publication of the mention of the grant of the European patent, publication will be effected only after the renewal fee and any additional fee have been paid (R. 71(9) EPC).

Under Article 86(2) EPC, the obligation to pay renewal fees to the European Patent Office terminates with the payment of the renewal fee due in respect of the year in which the mention of the grant of the European patent is published.

#### **Filing of translations in the Contracting States**

As regards translation requirements prescribed by the Contracting States under Article 65(1) EPC, please consult the website of the European Patent Office  
[www.epo.org](http://www.epo.org) → Patents → Law → Legal texts → National law relating to the EPC  
[www.epo.org](http://www.epo.org) → Patents → Law → Legal texts → London Agreement

#### **In case of a valid extension**

As regards translation requirements prescribed by the Extension States, please consult the website of the European Patent Office  
[www.epo.org](http://www.epo.org) → Patents → Law → Legal texts → National law relating to the EPC

**Failure to supply a prescribed translation in a Contracting State or an Extension State may result in the patent being deemed to be void *ab initio* in the State concerned (Article 65(3) EPC).**

#### **Important note to users of the automatic debiting procedure**

The fees for grant and printing and also any additional claims fees due under Rule 71(6) EPC will be debited automatically on the date of filing of the translation of the (relevant) claims, or on the last day of the period of this communication. However, if the designation fees become due as set out in Rule 71(8) EPC and/or a renewal fee becomes due as set out in Rule 71(9) EPC, these should be paid separately by another permitted means of payment in order not to delay the publication of the mention of grant. The same applies in these circumstances to the payment of extension fees. For further details see the Arrangements for the automatic debiting procedure (AAD) and accompanying Information from the EPO concerning the automatic debiting procedure (Annexes A.1 and A.2 to the Arrangements for deposit accounts (ADA) in Supplement to OJ EPO 10/2007).

**Examining Division:**

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Enclosure(s):      Form 2056  
                         41 Copies of the relevant documents

## Annex to EPO Form 2004, Communication pursuant to Rule 71(3) EPC

Bibliographical data of European patent application No. 05 701 874.9

For the intended grant of the European patent, the bibliographical data are set out below, for information:

**Title of invention:** - MEHRFACHER UNGENAUER MUSTERVERGLEICH  
- MULTIPLE INEXACT PATTERN MATCHING  
- CONCORDANCE INEXACTE MULTIPLE

**Classification:** INV. G06F19/00

**Date of filing:** 14.01.2005

**Priority claimed:** GB / 16.01.2004 / GBA0400974

**Contracting States\***  
for which fees have  
been paid: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL  
PL PT RO SE SI SK TR

**Extension States\***  
for which fees have  
been paid:

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\*) If the time limit for the payment of designation fees according to Rule 39(1) EPC has not yet expired and the applicant has not withdrawn any designation, **all Contracting States/Extension States** are currently still deemed to be designated. See also Rule 71(8) EPC and, if applicable, the above Note to users of the automatic debiting procedure.

\*\*) If two or more applicants have designated different Contracting States, this is indicated here.

From the INTERNATIONAL BUREAU

**PCT**NOTIFICATION CONCERNING  
SUBMISSION OR TRANSMITTAL  
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

PALMER, Jonathan, Richard  
Boulton Wade Tennant  
Verulam Gardens  
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London WC1X 8BT  
ROYAUME-UNI

Date of mailing (day/month/year) 14 March 2005 (14.03.2005)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference P64626WO00	
International application No. PCT/GB05/000106	
International publication date (day/month/year)	
	International filing date (day/month/year) 14 January 2005 (14.01.2005)
	Priority date (day/month/year) 16 January 2004 (16.01.2004)
Applicant SOLEXA LIMITED et al	

- By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
- (If applicable)* The letters "NR" appearing in the right-hand column denote a priority document which, **on the date of mailing of this Form, had not yet been received by the International Bureau** under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
- (If applicable)* An asterisk (\*) appearing next to a date of receipt, in the right-hand column, denotes a priority document **submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b)** (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
16 January 2004 (16.01.2004)	0400974.2	GB	02 March 2005 (02.03.2005)

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